REMARKS

In the specification, a new section entitled "Cross Reference to the Related Applications" as new paragraph [0001.1] has been added to confirm that this application is a continuation application of parent application U.S. Serial No. 09/660,257 {Attorney Docket No. 22601- P002US}, by Smith, et al. entitled "Methods and Mixtures for Treating Distressed Trees", filed Sept. 12, 2000, currently pending and which is incorporated herein by reference.

Claims 1-25 remain in this application.

New Claims 26 - 34 are being added by this Preliminary Amendment.

Applicants respectfully request that the Examiner consider the claims and the proposed amendments thereto. In the Final Office Action of the parent case, mailed on September 24, 2003; Examiner rejected all claims as being unpatentable.

Examiner stated that "Applicant only claims a 'distressed tree.' A pertinent definition of distress is a state of danger or desperate need" (Merriam-Webster's Collegiate Dictionary at 338). Examiner considers the nutritional stress in the reference of Miller to be within the ambit of a 'distressed tree'. Although no single reference discloses Applicant's exact invention, the Examiner considers the combination of Miller and Dale to disclose Applicant's invention. The combination is proper because both references deal with root growth in distressed plant species. Examiner considers Applicant to be alleging long felt need. One factor to be considered is that the 'failure to solve long-felt need may be due to factors such as lack of interest or lack or appreciation of an invention's potential or marketability rather than a want of technical know-how' (MPEP 716.04 citing Scully Signal Co. v Electronics Corp. of America, 570 F 2d 355). Examiner considers this reasoning to be the dispositive factor at work here. Examiner considers the general concept of applying root hormones to a damaged root system (where the damage is of any type) so as to attempt to restore the root system to be within the ken of one of ordinary skill in the botanical arts."

Examiner rejects claims 1, 3-7, 18, 20-22, 24 and 25 as unpatentable over Miller (US 4,872,899) in view of Dale (Fred Dale Special to the Toronto Star).

Examiner explains: "As to claim 1, Miller discloses a method of treating established (defining 'mature' of col. 9, line 66 as established) distressed (general teaching from 'iron chlorosis' of abstract) tree species (col 9, line 66), the root system in the soil (col. 9 line 62-63) comprising applying a mixture to the root area (col 9 lines 62-67). Not disclosed are the steps of creating a mixture of fertilizer and a root hormone (page 2 1st para.). It would have been obvious to one of ordinary skill in the art at the

time of the invention to modify the method of Miller by using the mixture Dale so as to increase plant growth.

As to Claim 4, Miller as modified by Dale further disclose a mixture of powders (see Dale).

As to Claims 5 and 7, Miller as modified by Dale further disclose a mixture of liquids ("drench" of Miller at col. 9 line 63).

As to Claim 6, the limitations of Claim1 are disclosed as described above. Miller as modified by Dale further disclose a fertilizer with an N content of 10% and a potassium content of 10% (see Dale). Not disclosed is the P content at 25%. It would have been obvious to one of ordinary skill at the time of the invention to further modify the method of Miller as Modified by Dale by using a fertilizer with a P content of 25% depending upon availability of fertilizers.

As to claim 18, Miller discloses a method of treating a distressed (general teaching from "iron chlorosis" of abstract) tree species (col 9 line 66) comprising a hole in a root area of a tree ("banded near root zone of row crops (commercial crops, vines, trees)" of Miller at col . 9 lines 64-65). Not disclosed is applying a mixture of fertilizer and root hormone (page 2, 1st para.). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Miller by using the mixture Dale so as to increase plant growth.

Claims 2, 8-17, 19, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller (US 4,872,899) in view of Dale (Fred Dale Special to the [Toronto] Star) in further view of Green Light Rootone.

As to claim 2, the limitations of claim one are described above. Not disclosed is the use of NAA for the growth hormone. Green Light Rootone, however, discloses the use of NAA as a growth hormone. It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the method of Miller as modified by Dale by using Rootone as the growth hormone as disclosed by Green Light Rootone as a know effective root stimulant for use with a wide variety of plants (see Green Light Rootone).

As to Claims 8 and 9, the limitations of Claim 1 are disclosed as described above. Not disclosed is a mixture further including a fungicide. Green Light Rootone, however, discloses use of Thiram in a root mixture. It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify the method of Miller as modified by Dale by using Rootone which includes Thiram as disclosed by Green Light Rootone so as to increase plant growth.

As to claim 10, Miller discloses mixture (defined as "drench" of Col. 9 line 63) for treating adult (defining "mature" of col 9 line 66 as established) distressed (general teaching from "iron chlorosis" of abstract) tree species (col 9 line 66) the root system in soil (col. 9 lines 62-67). Not disclosed is the mixture comprising a fertilizer and NAA. Dales discloses a root growth hormone of NAA. It would have been obvious to one of ordinary skill in the art at the time of invention to modify the mixture of Miller by using the mixture Dale so as to increase plant growth and further modify the mixture by using Rootone as disclosed by Green Light Rootone depending upon availability of growth hormones.

As to Claim 25, Miller as modified by Dale further discloses an implement for applying the mixture inherent in the word "banded" of Miller column 9, line 64.

Summary of Smith's Teaching Regarding Distress and Decline in Trees

Smith teaches the treatment of a distinct condition in trees—not "tree illness" (Page 4, Line 15) as for example iron chlorosis, oak wilt, or infection with Phytophthora ramorum, or "parasites" as for example mistletoe or insects such as scale, aphids, and spider mites.

The condition Smith teaches is "an adverse physiological reaction as result of root damage" (Page 1, Line 16-18).

The "damage", (Page 1, 24) caused most often by "construction", (Page 1, Line 15) is known commonly and taught by Smith as "encroachment" (Page 2, Line 10). The [pathological] "reaction" (Page 5, line 7) to damage causes "general injury to a tree's health or to slows its growth markedly" (Page 1, Line 24-25). The "slow-down" is a process [from the word "continues"] (Page 5, line 11) resulting in the production of fewer and fewer new cells at the root tip (Page 5, Lines 8-9); a reduction "in the absorptive capacity of the tree" resulting in "insufficient water reaching the tips of the limbs" (Page 4, Line 16).

This process of the slowing of growth in a tree is commonly and colloquially known as both "distress" (Page 1, Line 8) and "decline" (Page 5, line 13) and has a very specific set of symptoms and specific progression.

The "production of fewer and fewer cells at the root tips" (Page 5, Line 7) and the subsequent "reduction of the absorptive capacity of the tree" (Page 5, Line 10) causes, sometimes over a period of many years (Page 1, Line 29) a "thinning of the canopy" as fewer and fewer leaves can be supported, and the tips of branches die back

(Page 5, Line 14)."The continuing decline in leaves provides less food" (Page 5, Line 14) and the tree compensates for loss of canopy by growing "water sprouts" (Page 5, 16).

If the distress and decline continue unchecked, the dying back continues, the canopy of the tree dwindles, until there is a cessation of leaf production and death of the tree (Page 5, Line 21).

Miller analysis

Miller teaches that the invention is a cost effective solution to the problem of iron chlorosis in farming row crops as well as raising vegetables and ornamentals.

This is explained in Miller at Column 1 Line 62 – Column 2 Line 53.

"In certain geographical areas with certain types of soils, plants have difficulty in maintaining a constant and adequate iron supply. In these geographical areas, iron deficiency in plants may become an acute problem. Among the symptoms of iron deficiency is a yellowing of the plant, particularly a yellowing of the leaves. As expected, this yellowing results from the close association between iron and the chloroplasts, the production of chlorophyll, and the operation of photosynthesis within the plant. If the supply of iron is restricted, there will be a reduced supply of chlorophyll, a corresponding reduction in photosynthesis and a resulting yellowing of the plant.

Iron deficiency in plants and the resulting yellowing of the leaves is generally known as iron chlorosis. Iron chlorosis is a widespread and serious problem in many geographic regions, and it is particularly common and pronounced in arid and semi-arid regions. Typically, soils in which iron chlorosis is a serious problem are calcareous soils (i.e., high in lime content) which often also have a high pH. This type of soil is also common in the arid and semi-arid areas where iron chlorosis is most often found.

Investigators have concluded that some of the major causes of iron chlorosis include a poor iron supply, high soil pH, excessive calcium carbonate in the soil, high levels of bicarbonate in the soil or irrigation water, excessive irrigation, high concentrations of phosphate, high concentrations of heavy metals, extreme temperatures, high light intensities, poor aeration and several other related factors. Many of these factors are found in arid and semi-arid regions having alkaline, calcareous soils.

Indeed, several of these factors may operate simultaneously in areas having iron chlorosis problems. For example, soils in arid or semi-arid areas are very likely to have

a high pH, a high level of calcium carbonate, and at the same time require regular irrigation. These same areas are likely to be exposed to extreme temperatures and high light intensities. When several of these factors act simultaneously, the probabilities of severe iron chlorosis substantially increase.

The ultimate result of iron chlorosis problems in certain soils and geographic areas is that many types of plants cannot be successfully grown. [Emphasis Added] Any type of plant which lacks a high capacity for absorbing iron will be susceptible to iron chlorosis and the resulting reduction in photosynthesis. However, most types of vegetables, fruits, and berries are particularly susceptible to iron chlorosis.

As a result, areas having high pH calcareous soils, as expected, often have a limited scope of possible crop production. Agricultural production may well be limited to grasses, alfalfa, and certain grains, or crop production may be prevented entirely; production of fruits and vegetables and many other commercial crops is likely to be severely limited."

Miller Contrasted with Smith

Smith differs markedly from Miller in ways that preclude Smith's claims being anticipated by Miller.

Miller teaches that "The ultimate result of iron chlorosis problems in certain soils and geographic areas is that many types of plants cannot be successfully grown." In other words, Miller's treatment is for a nutritional deficiency-- insufficient iron or insufficient acidity limiting iron absorption-- that limits the performance and production of commercial crops or results in the yellowing of ornamentals.

The invention in Miller is of a cost effective soil acidifier and iron source (Column 4, Lines 24-25, 34, 40; Column 5, 49-51; Column 13, Line 39) and its application to the surface of the soil that improves iron availability and makes feasible the introduction of plant species into arid and semi-arid environments and climates with lime rich soils in which they otherwise would not occur except by seeding and transplantation.

Smith is concerned with naturally occurring hardwood species of great value to homeowners as shade trees. The trees Smith describes suffer from an "adverse physiological reaction as a result of root system damage" by construction commonly and colloquially known as "decline".

The ultimate result at issue is not the failure of vegetable, berry, and fruit crops to thrive and bear cost effective yields or the yellowing of ornamental trees and shrubs

in back yards as taught by Miller. The ultimate result at issue in Smith is the survival of mature, established shade trees and what it means in terms of loss of property value for the homeowners and quality of life for the community.

Miller teaches the application of a solution of ferrated rhodotorulic acid by "drenching" and "banding" with farm production spraying equipment to commercial farm crops as a remedy to the "iron chlorosis" nutritional deficiency.

Miller also teaches that applications of this material as a nutrient source of free iron to the surface of the soil is a temporary remedy (Page 4, Line 15-23, Col 5, Line 33-38) requiring reapplication even as an improved iron source since the cause of the nutrient deficiency condition is the composition of the soil and the selection of plant species to be grown in it.

Although Miller uses the term "treatment", it is clear from the general teaching of Miller that ferrated rhodotorulic acid could be accurately described as a soil amendment necessary for effectively growing plants in calcareous soils because "iron chlorosis" is always caused by the lack of free iron in the soil.

Miller at Column 9 line 52 – Column 10 line 13 states:

"The ferrated rhodotorulic acid would be added to the soil as a drench, added to the soil near the root zone of plants or banded near the root zone of row crops (commercial crops, vines, trees). For small shrubs 1 to 5 oz. of siderophore would be added per plant. Mature trees would receive from 1/8 to 1/2 pound/tree, and for fruit trees, such as cherries, apricots, peaches, 1/4 to 3 oz. of siderophore would be added per inch of trunk diameter. Crops such as raspberries and strawberries would receive 1/4-3/4 pounds per 100 foot rows. The level of application depends on severity of chlorosis and plant species.

Another method of application involves direct inoculation of plants with a solution of the ferrated siderophore. It may also be applied as a powder to drilled holes in tree trunks. These methods have somewhat limited application, however, they are expected to be important in treating iron chlorosis in large, valuable plants such as trees and ornamental shrubs, or plants in a 'back yard' setting."

Miller teaches four application methods. (1) The application of the ferrated siderphore solution as a "drench, added to the soil near the root zone of plants" or (2) "banded near the root zone of row crops" or (3) "direct inoculation of plants with a solution of ferrated siderphore" or (4) ferrated siderphore "applied as a powder to drilled holes in tree trunks".

In all methods of applications of the ferrated siderphore solution to the soil, Miller teaches to apply the solution directly to the undisturbed surface of the soil.

Examiner alleges the meaning of Miller discloses a treatment for a distressed tree as taught by Smith.

Examiner relies upon the reference to the ferrated siderphore solution "banded near the root zone of row crops", that is, sprayed with an agricultural spray rig in a band between the rows as the use of an implement anticipating Smith's method of applying the treatment by making a hole in the root area and applying the material in the hole.

However, in Miller there are no instructions to "incorporate", "till', or "plow" the soil in connection with either the "drench" or "band" methods. The use of these words in the instruction of the method of "banding" would mean that either a leading or following disc or plow blade would be used during the spraying of the bands.

In other words, there is no teaching in Miller to disturb the soil or to create a hole in order to apply the ferrated siderphore solution directly to the root area. This differs with Smith's teaching of applying the Smith's treatment by creating a hole in the root area and applying the treatment material in the hole.

Furthermore, in Miller the application of the ferrated siderphore solution whether drenched or sprayed is applied "near the root zone". This differs with Smith's teaching to apply the treatment material into "the holes opened in the root area of the tree under treatment."

The "direct inoculation" or "direct injection" of plants with ferrated siderphore solution and application of ferrated sidephore "applied as a powder in drilled holes on tree trunks" as taught by Miller are irrelevant and also does not anticipate Smith. However, the only mention of a tree and Examiner's finding of the use of ferrated siderphore on a "mature" tree, references this irrelevant method of applying powder to a hole drilled in the trunk of a tree.

In contrast, Smith teaches that "holes are opened in the root area" (Page 6, Line 7) using "manual implements, such as shovels or trowels" (Page 6, Line 19) or with a water drill that uses "a jet of water" (Page 6, Line 20). The treatment mixture is prepared in advance of use (Page 6, Line 24) and the powder or liquid preparation is "applied to the holes opened in root area" (Page 7, Line 16). In other words, a hole is made directly into the root area, not "near the root zone" as Miller teaches. Also the treatment material, having been prepared in advance, is put into the holes prepared for the treatment "by hand or machine" (Page 7, Line 20), not applied to the surface of the soil "near the root zone".

The differences between treatments Miller and Smith are clear. Not only are the methods of application and the materials applied as treatment completely different, but also the reasons for treatment are different. Miller teaches a method to treat a plant illness caused by the lack of an essential nutrient—iron chlorosis resulting from insufficient iron absorbed by the plant and according to the general teaching of Miller, the choice of plants that are not native to be seeded or transplanted into calcareous soil.

There are differences in materials, methods of application, intent and purpose, and contrast between a treatment for a specific, non-lethal nutritional deficiency in Miller and a treatment for a lethal, systemic decline in Smith.

The subject of Smith is mature, established trees in soils in which they normally would occur. In contrast, the subject of Miller is commercial crops and ornamentals in calcareous soils in which they normally would not occur.

The primary analysis of the subject plants in Smith (trees) is that in reaction to encroachment, growth has slowed. In contrast the primary analysis of the subject plants (commercial crops, vines, trees, berries, vegetables, ornamentals) in Miller is that the soil is deficient in free iron to support normal growth and therefore the plants exhibit the yellowing of "iron cholorsis").

The remedy for the condition in Smith is the application of high concentrations of 3-indolebutryic acid or naphthalene acetic acid or derivatives (Page 6, Lines 28-29) which has been discovered by Smith to be an effective treatment of the low growth condition known as commonly and colloquially as "distress" or "decline" as taught by Smith.

The effective treatment in Miller for "iron chlorosis" caused by calcareous soil is the amendment of the soil with ferrated rhodotorulic acid.

The plants contemplated in Miller have a "plant illness", they are not in "distress" or "decline" or "slow[ing]-down" or "dying" as taught in Smith.

The effect of the treatment in Smith is a reversal in the slowing of growth in the tree. In contrast, the effect of the treatment in Miller is the temporary normalization of chlorophyll in the leaves of the plants.

The application of the treatment in Smith is directly to the root area by application of the material to holes created in the root area. The root area at the canopy edge (Page 6, Lines 8-9) of a mature, established tree is at a depth of 8 to 10 inches (Page 8, Line 21). In contrast, in Miller, the application of the treatment is always on the surface, whether a "drench" or "banded" or directly into the plant as a

foliar spray, injection, or powder application to holes drilled in the trunk. Furthermore, the surface application is to an area "near the root zone" in Miller and "in the root area" in Smith.

There are insufficient common elements for Smith to be anticipated by Miller.

Someone of ordinary skill in the art at the time of the invention in Smith could not have modified Miller's treatment of iron chlorosis for plants in calcareous soils with ferrated rhodotorulic acid using a surface application to reach Smith's use of IBA and NAA and derivatives and it's application into the root area of distressed and declining trees.

Dale analysis

In the Office Action mailed 06/05/2002, Examiner rejected Smith's claims as being anticipated by prior art as disclosed by Fred Dale's 1987 description of methods for transplanting sapling trees and other types of plants.

The reasons for rejection of Smith's claims in view of Dale in that Office Action differ from the reasons for the rejection of Smith's claims in view of Dale articulated in the Office Action Mailed 12/27/2002 which were, apparently, abandoned without remark in the subsequent Office Action mailed 09/23/2003.

Since the subject matter of Dale is central to Examiner's theories that continue to emerge as the basis for rejecting Smith's claims, some of Examiner's rejections of the Office Action mailed 12/27/2002 are considered here in detail for the sake of completeness.

In the Office Action mailed 12/27/2002, the Examiner explains:

As to claim 18, Dale discloses a method of treating a distressed (defined as distressed due to the change in weather in April at page 1st line of Body) trees (page 1st line of Body) comprising a hole (inherent in washing in soil about the roots of page 2 1st line) and applying of a fertilizer and root growth hormone (page 2, line 2).

In the Office Action mailed 9/23/2003, the examiner has replaced the rationale for rejection of Smith's claims with the treatment for a "tree" in distress and decline as taught by Smith with a dictionary definition of distress and relying on Miller as prior art for that dictionary condition while retaining the reference to Dale as prior art for the "mixture" of fertilizer and root growth hormone. Examiner explains:

As to claim 18, Miller discloses a method of treating a distressed (general teaching from "iron chlorosis" of abstract) tree species (col 9 line 66) comprising a hole

in a root area of a tree ("banded near root zone of row crops (commercial crops, vines, trees)" of Miller at col . 9 lines 64-65). Not disclosed is applying a mixture of fertilizer and root hormone (page 2, 1st para.). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Miller by using the mixture Dale so as to increase plant growth.

As demonstrated above, the claim of the use of Miller as prior art anticipating Smith's teachings on treatment of trees in decline and distress by applying treatment material to the root area is without merit.

Therefore, the matter at hand is whether Dale's teaching on transplantation of saplings is sufficient to anticipate Smith's claims.

A good place to start the analysis of Dale is Examiner's prior rejection of Claim 18.

The Examiner finds that a tree appropriate to the purpose of being transplanted as taught by Dale is a "distressed" tree (Page 4, paragraph 6) as defined by the teaching of Smith. Examiner explained, "As to claim 18, Dale discloses a method of treating distressed (defined as distressed due to the change in weather in April at page 1st line of Body) trees (page 1st line of Body)..." In other words, Examiner finds that Dale discloses a method of treating a "distressed" tree as taught by Smith and anticipates the teachings and claims of Smith regarding the treatment of low growth trees in decline and distress.

Examiner's theory here relies on the premise that the tree that Dale suggests be purchased for transplantation is a "distressed" tree.

Examiner's basis for the classification of a tree suitable for transplant as being distressed is "due to the change in the weather" in April in Toronto, Canada as described by Fred Dale.

The first paragraph of Dales reads as follows: "April is the time to transplant trees, shrubs, evergreens, and roses. They will have ample time to establish new roots in your garden soil before they have to support leaves in hot weather. And this is true even with plants grown in containers."

Dale teaches that "April in the time to transplant trees..." In other words April is the safe and correct time—not too cold with snow and ice that might destroy the young sapling and not too hot that would cause the evaporative and transpiration rate to rise so that the tree would run out of water and shock in the heat. The weather in April does not represent a "danger" or cause "urgent need" in transplants. To the contrary, Dale declares that April is the best time in Toronto to transplant trees.

Furthermore, it is clear from the description of Dale that the plants to be transplanted would have been acquired specifically for that purpose.

Paragraph 2 reads as follows:

"Container grown plants, those with roots tied up in burlap (balled and burlapped or B. and B.), plants grown in the field and stuffed into containers as well as bare root (including those wrapped in packages and sold in stores) are the many ways you'll find plants for sale. Of them all, fresh, container grown ones transplant the best, followed by B. and B. But all may safely be moved as soon as you can get them. (Container plants may also be set out during the growing season even after they have leaves; they will need some extra care during hot weather.)"

In starting in Paragraph 8 and continuing into Paragraph 9, Fred Dale comments on plants in containers:

"...use a long knife to cut around the inside of the container; you may also need to poke through the bottom drainage holes with a piece of wood. If all else fails, cut the pot or break it off.

In this latter situation it's likely the plant is overmature, i.e., it should have been sold last year."

These instructions make it clear that the trees and plants that are referred to in the Dale article are to be purchased specifically for the purpose of transplantation. Someone of ordinary skill in the art would know by experience and common sense that such plants would be represented by the nursery or tree farm and purchased not as "distressed" or in "decline" but as robust and highly viable tree or plant stock well worth the purchase price.

Consequently, the Examiner's allegations that the "tree" in Dale is a "distressed" tree within the meaning taught by Smith and that Dale's description of a transplantation procedure is intended as a treatment and remedy for that distress is without any merit whatsoever.

It is in this context that the further reasoning of Examiner regarding Dale as the disclosure of prior art as a "mixture" of fertilizer and root growth hormone anticipating Smith's claims. Examiner's finding of the creation of a "mixture" of fertilizer and root growth hormone is also a misreading of Dale's description of a transplant procedure and intent.

Dale reads (Paragraph 11) as follows:

"Wash in the soil around and over the root mass with a dilute solution of a very high phosphorus fertilizer such as grade 10:52:10. It wouldn't hurt to dust the area with

a root hormone powder and wash this in, too. Add more soil as necessary and more transplanter solution till some stands briefly on the soil surface. Do not water again until the soil surface is quite dry to the touch. Keeping roots in soaking wet ground is as bad as letting them dry out."

Dale does not mention creating a "mixture" of fertilizer and root growth hormone. What he does do is strongly suggest dilute liquid fertilizer is useful in successfully transplanting small trees. On the other hand, the use of "root growth hormone" is clearly optional.

The colloquial phrase "it wouldn't hurt" indicates Dale's skepticism of the necessity of including of root growth hormone powder. "It wouldn't hurt" means that the component is not essential to the success of the transplant procedure he describes.

In other words, if the rooting hormone is included, Dale indicates that it will do no harm. That is, it would not hurt the transplantation process. However, Dale is telling the reader of the newspaper article that if they don't happen to have root growth hormone on hand or cannot find it to purchase or cannot afford it, that's acceptable. The transplant procedure using a dilute fertilizer solution will suffice and the plant will grow roots in the mild April weather necessary to thrive.

If Dale's article was an "instruction" to the reader in the art of creating a mixture of fertilizer and root growth hormone, common sense dictates that he would have mentioned the fertilizer and root growth hormone together at every reference or referred to a specific mixture or would have included language that would have required the inclusion of root growth hormone. That is not the case.

The use of a "dilute solution of fertilizer" is mentioned 3 times in Paragraphs 11, 12, and 13; including the ratio of components in the fertilizer he recommends. This dilute solution of fertilizer is also referred to separately twice as "transplanter solution" in Paragraphs 11 and 12. Dale also suggests the use of supplemental fertilizers later in the year for various plants—"a lawn-type" and "a vegetable garden kind" (Paragraph 13, Lines 2-3).

The notion that IBA or NAA or derivatives can be "dusted in the area" and "washed into the soil" and have an effect in the transplantation process Dale describes means that Dale has no knowledge whatsoever regarding the use of the compounds or the concentrations necessary to make them effective.

The solubility of IBA and NAA is very low and they are not soluble in water but in a 5% sodium hydroxide solution or ethanol. Moreover, IBA and NAA oxidize at a high

rate complicating their use, since the oxidation products do not have the same plant tissue transformation properties as the auxin.

When used in cloning plants through cuttings or cloning plants using cell cultures, the chemicals are applied either directly to a cut end of a plant cutting or directly onto the cell culture nodes. All manufacturers of rooting hormone preparations instruct that their product be applied directly to the cut made on the plant material being prepared for propagation.

According to the current state of the art in propagation, in order to be effective these auxins are placed directly into contact with plant cells in a high concentration as taught by Smith. This contrasts with the Dale suggestion to "dust the area" (Paragraph 13, Line 2).

However this newspaper article is read, the ambiguity regarding "root hormone powder" is inescapable. Dale, while suggesting the optional, separate use of "root hormone powder" was clearly unaware of any advantage it might provide to the sapling transplantation process and does not state any anticipated effect.

The message is clear to his readers that using fertilizer is a necessity. However, "root hormone powder" is mentioned only once; no brand name is mentioned; no chemical name is supplied; and no ratio is given for a "mixture". Furthermore, the use and any benefit of the use in the transplantation process is unexplained and the instruction for use is qualified with "It wouldn't hurt..." making its use optional.

Examiner's finding that within Dale's description of a transplant procedure there is an invention of a "mixture" is without merit.

In addressing the Examiner's additional earlier finding abandoned without remark that Dale describes a treatment of a distressed tree by applying a mixture to a "hole (inherent in washing in soil about the roots of page 2 1st line)" (above).

Dale's newspaper article describing a transplantation process for sapling (Paragraph 10, Line 1) trees, shrubs, evergreens and roses (Paragraph 1, Line 1) is just that. In order to transplant a plant, it requires a hole. This is a hole in the ground into which roots are placed, not a hole in the root area to which a treatment or remedy for trees in "distress" or "decline" in applied as taught by Smith.

Dale suggests that the liquid fertilizer solution be applied to the "soil around and over the root mass" (Paragraph 11, line 1). This differs markedly from the teaching by Smith that the material be introduced into a hole in the root area, meaning, of course, that the treatment for trees in "distress" or "decline" as taught by Smith is introduced directly into the soil of the root area.

Examiner's earlier finding that within Dale's description of a transplant procedure there is an invention of a treatment for a tree in decline and distress as taught by Smith is without merit.

Root Growth Not A Common Element in Miller and Dale

In rejecting Smith's claims, Examiner relied on Miller and Dale taken together in combination as prior art. Examiner explained (as above):

"As to the Smith affidavit (Exhibit A), the allegations are...(2) since no one has disclosed Applicant's method and composition it is novel (Affidavit at para.1c)...

"As to allegation (2), although no single reference discloses Applicant's exact invention Examiner considers the combination of Miller and Dale to disclose Applicant's invention. The combination is proper because both references deal with root grow [sic] in distressed plant species." (Office Action mailed 10/24/2003 Page 3, Paragraph 4)

Examiner's interpretation of both Miller and Dale does not accurately reflect their meaning.

The plants with "iron chlorosis" in Miller are deficient in iron not because of some lack of growth in general or the roots. The plants in Miller are deficient in iron because of the lack of free iron to be absorbed by the plant and transported to the leaves. The issue of "root growth" is not mentioned in Miller and no references imply it as an issue. As demonstrated above, Miller is not about trees in "distress" and "decline" as taught by Smith.

The claim that Miller is a reference that deals with root growth in distressed plant species is without merit.

Dale's newspaper article describes a transplant procedure for his readers. Naturally, roots are discussed. Growth, however, is assumed. "April is the time to transplant trees, shrubs, evergreens and roses. They will have ample time to establish new roots in your garden soil before they have to support leaves in hot weather"

The newspaper article is not about "root growth", but transplantation, and, as demonstrated in the discussion regarding Dale above, does not reference a treatment for trees that are "distressed" or in "decline" as taught by Smith.

The claim that Dale is a reference that deals with root growth in distressed plant species is without merit.

Since neither Miller nor Dale "deal with root growth in distressed plant species" their combination is not proper and Applicant's allegation that "...(2) since no one has disclosed Applicant's method and composition it is novel..." stands unrefuted.

Products with IBA and NAA or their Derivatives

In the Office Action mailed 09/24/2003, Examiner found: "Claims 2, 8-17, 19, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller (US 4,872,899) in view of Dale...in further view of Green Light Rootone."

"As to Claim 2, the limitations of Claim 1 are described above. Not disclosed is the use of NAA for the growth hormone. Green Light Rootone, however, discloses the use of NAA as a growth hormone. It would have been obvious to one of ordinary skill in the art at the time of invention to further modify the method of Miller as modified by Dale by using Rootone as the growth hormone as disclosed by Green Light Rootone as a known effective root stimulant for use with a wide variety of plants (see Green Light Rootone)."

This line of reasoning fails because it takes Miller and Dale together and the combination is improper.

Furthermore, the finding of Green Light Rootone or any other rooting products with IBA or NAA or their derivatives as prior art which would anticipate and preclude Smith's claims is without merit for the reasons set forth below.

Commercially available rooting products containing IBA or NAA and their derivatives have been around for a since at least the 1970's and the use of these chemicals dates to 1930's. However, the uses have been limited to cloning of plants from a cell culture, cloning of plants from cuttings, and "root stimulator" solutions for starting small plants including saplings.

The crux of Examiner's finding is that a person of ordinary skill in the art of Botany after an examination of Miller, Dale, and a rooting hormone product containing IBA or NAA or derivatives (such as Rootone [now by Gulf Stream]) would be able to deduce Smith's methods and claims.

This finding by the Examiner boldly flies into the face of the fact that in almost 80 years of use in Botanical laboratories and 40 years of use by commercial nurseries and home gardeners, that no one has described the use of IBA or NAA or their derivatives as a treatment or remedy for mature, established trees in distress or decline as taught by Smith.

Simply put, Smith's idea of using a combination of fertilizer and root growth hormone applied directly to the root system using holes made in the root area is a new idea—no one had thought of it before!

One very simple demonstration of this is that none of the manufacturers of the retail products containing IBA or NAA or their derivatives claim their product is a remedy for trees in distress or decline as taught by Smith. This is pointed out previously in affidavit by Dr. Smith.

The people who manufacture the root growth hormone products are people not of ordinary skill, but extraordinary skill in the art, yet, as pointed out the affidavit of Dr. Smith, they do not recommend their products for use for the purposes, circumstances, or methods as described by Smith even though doing so would provide an additional use for their products and mean that they would sell more of their products.

The absence of claims for use similar or identical to Smith's methods would lead a reasonable person to the common sense conclusion that the manufacturers of these products, people of extraordinary skill in the art, had not deduced nor thought of nor puzzled out these uses.

If the highly skilled manufacturers of products containing IBA and NAA or their derivatives had not thought of it, why would the Examiner conclude that someone of ordinary skill in the art would have been able to deduce Smith's methods?

Rejection of Allegation of Long Felt Need

The Examiner considers Applicant to be alleging long felt need. One factor to be considered is that the 'failure to solve long-felt need may be due to factors such as lack of interest or lack or appreciation of an invention's potential or marketability rather than a want of technical know-how' (MPEP 716.04 citing Scully Signal Co. v Electronics Corp. of America, 570 F 2d 355). Examiner considers this reasoning to be the dispositive factor at work here. Examiner considers the general concept of applying root hormones to a damaged root system (where the damage is of any type) so as to attempt to restore the root system to be within the ken of one of ordinary skill in the botanical arts."

The factors of establishing long felt need (MPEP 716.04) are: "First, the need must have been a persistent one that was recognized by those of ordinary skill in the art." (First Paragraph) "Second, the long-felt need must not have been satisfied by

another before the invention by applicant." (Second Paragraph) "Third, the invention must in fact satisfy the long-felt need."

Smith's invention meets these requirements to be allowed on the basis of log felt need.

Examiner's allegation that "...the general concept of applying root hormones to a damaged root system (where the damage is of any type) so as to attempt to restore the root system to be within the ken of one of ordinary skill in the botanical arts" is erroneous and without merit.

As stated above, Examiner's allegations fly boldly into the face of the fact that in almost 80 years of use in Botanical laboratories and 40 years of use by commercial nurseries and home gardeners, that no one has described the use of IBA or NAA or their derivatives as a treatment or remedy for mature, established trees in distress or decline as taught by Smith. See the section above -- Products with IBA and NAA or their Derivatives for the complete discussion.

Examiner's finding of a the 'failure to solve long-felt need ...due to factors such as lack of interest or lack or appreciation of an invention's potential or marketability rather than a want of technical know-how' disregards evidence supplied in the patent application and in affidavit by Dr. Don Smith demonstrating the commercial value and demand for invention.

No new matter has been added; the application has been merely amended to more particularly point out and distinctly claim the subject matter Applicant believes is inventive. Applicant respectfully submits that the Claims as they now stand are patentably distinct from those of the parent application and its cited art.

Attached to this Preliminary Amendment are copies of the prior Affidavits filed in the parent case for the Examiner's reference, as follows: Cooper (Exhibit B), Seago (Exhibit C), Russell, dated 10/01/02 (Exhibit D-1), Russell, dated 06/24/03 (Exhibit D-2) and Martin (Exhibit E).

The Commissioner is hereby authorized to charge any fees or credit any overpayment to Deposit Account Number 23-2426 of WINSTEAD SECHREST & MINICK P.C.

If the Examiner has any questions or comments concerning this paper or the present application in general, the Examiner is invited to call the undersigned at (214) 745-5374.

Respectfully submitted,
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March 24, 2004

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